P. I. Performance
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NEWSLETTER NO. 1

RESEARCH ON PHOTOINTERPRETER PERFORMANCE

21 April 1964

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To: [redacted] 25X1

NGA review(s) completed.

Newsletter No. 1

RESEARCH ON PHOTOINTERPRETER PERFORMANCE

This is the first in a series of newsletters regarding a research project concerned with Photointerpreter Performance. Because some of the participants of this research project are physically separated by many miles, newsletters such as this one will be written from time to time in an effort to achieve and maintain good communication regarding project matters.

These letters will be informal. It is hoped that all concerned will participate by contributing items of interest. Again: the purpose of these newsletters is to communicate.

Project History

Early in February '64 D.N.B., F.F. and F.S. completed an exploratory study on PI performance as a function of ground resolution. Among the conclusions formed at the end of that study was that the combination of proper experimental design, psychometric measures, carefully prepared and objectively measured stimuli and sound statistical treatment of data can yield significant and very useful information regarding the extraction of intelligence from aerial photographs. Consequently, it was decided to do more work along these lines in an effort to better understand the effect of various factors on PI performance.

During the end of March '64, D.N.B., F.F., A.H. and F.S. met for several days to discuss and decide how best to proceed. As a result, three alternate proposals were made. On 15 April L.D., J.W.C., D.N.B. and F.S. discussed these proposals. J.W.C. and L.D. expressed an interest in performing the work described by Proposal #3. J.W.C. is presently working on the funding of this proposal.

Planned Effort

To thoroughly study, at one time, all or even a major portion of those factors which effect PI performance will not only require an experiment of tremendous magnitude but also seems unwise. Therefore, in the planned work three effects will be studied as a function of PI performance: Ground Resolution, Stereo, and Color. The first portion of the work will be concerned with Ground Resolution and Stereo, followed by a study of Color. Very briefly, the planned activity will be as follows:

1. Collection of Photography — OSA [redacted] 25X1
2. Preparation of Gems (Stimuli) — [redacted]
3. Test Development — [redacted] 25X1
4. Testing — [redacted] 25X1
5. Analysis of Test Responses and Preparation of Report [redacted] 25X1

The objective of this effort is to provide, through experimental means, assistance in assessing the relative worth of various collection systems yielding material of differential ground resolution in mono or stereo, and in monochrome or color.

What's Next: Collection of Photography

From a brief survey of targets of typical interest and of those available for photography within the U.S., it was concluded that both the black and white and color photography should include:

1. Missiles, I.C.B.M.
   - 5 Minutemen Sites
   - 5 Titan Sites
   - 5 Atlas Sites

2. Electronics
   - 20 Radar Dish Antennas
   - 20 Stick Mast Antennas

3. Military
   - 20 Air Fields
   - 5 Air Fields with Nuclear Facilities
   - 5 Submarine Sites

4. Storage
   - 20 Sites: Military, Ammo, BW/CW

5. Industry
   - 20 Sites

6. Transportation
   - 20 Sites: Land, Air-A/F & A/C, Sea, Ports and Harbors, Ships at Sea

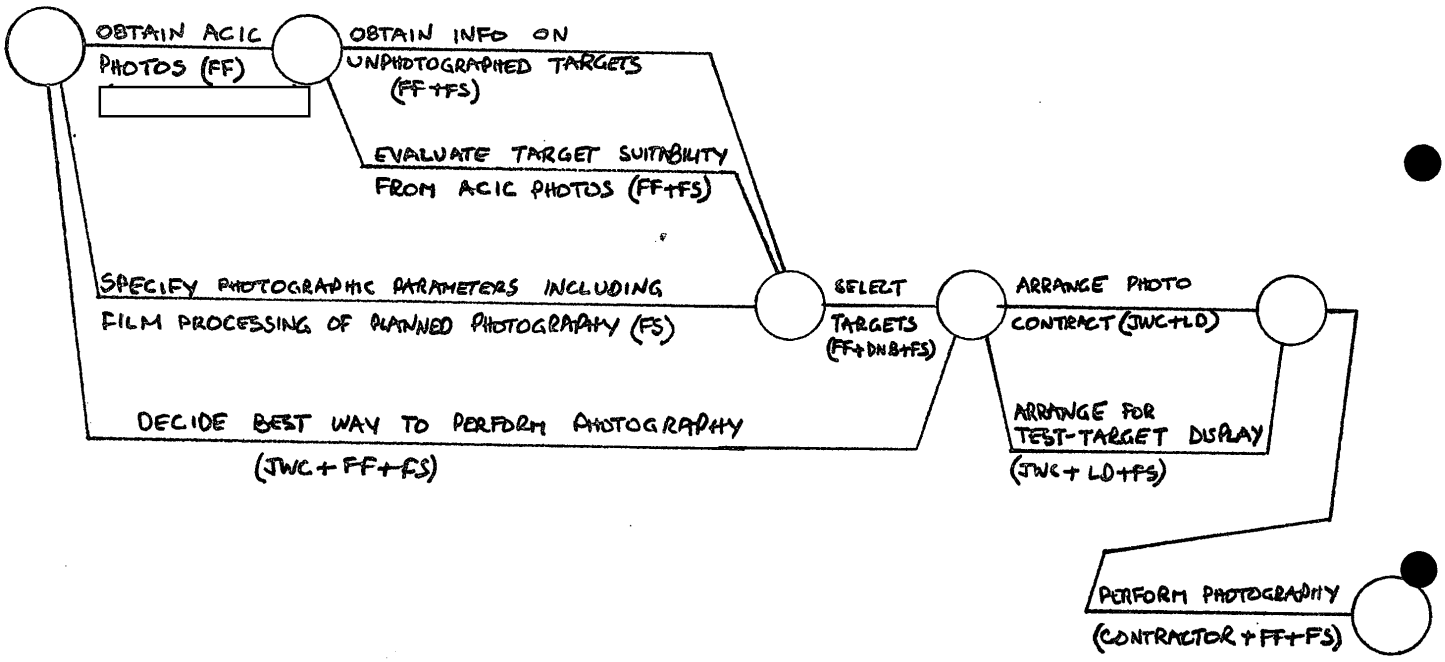
7. Power
   - 15 Sites

With proper flight path planning, it is anticipated that from a large number of film frames, 75 can be selected which contain all of the targets listed above.

It was decided that the best way to obtain the photography is through an aerial photo survey outfit. We will either buy the photography or buy the use of an airplane, cameras and crew and accompany the crew during the photography. The attached chart shows the actions required to obtain the photography.

not if OSA/AF can accomplish

25X1



Gem Making

Although many of the Gem-making details have not been planned, some tentative plans are: to make from about 75 frames of photography black and white Gems varying in ground resolution [redacted] in 5 increments; to hold constant these image characteristics: 25X1

1. Granularity (similar to that of Type 4404 Film)
2. Spread Function Shape
3. Haze
4. Verticality of Photography
5. Film Resolution (Approx. 100 L/MM);

and, since ground resolution will vary, so must the scale and the simulated system focal length vary at a constant simulated altitude. Sun altitude may be held constant or may be randomly varied.

Technical Conference

In an effort to create a better understanding of the photographic and psychological techniques and terminology employed in this work, a technical conference is planned as part of this research project. The conference will 25X1 be held at [redacted] shop. A tentative date is 9 through 12 June. The meeting will be attended by D.N.B. and several others from his shop, F.F., R.W., F.S., and others who are directly concerned with, and have an interest in, the technical aspects of this project. The tentative program is:

Tuesday A.M. : Optics and Modulation Transfer Functions. 25X1 [redacted]

P.M. : Photographic Techniques and Terminology, 25X1 [redacted]

Wednesday A.M. : Other Related Experimental Research. 25X1 [redacted]

A Look at Several Aerial Cameras.
(Plant Tour)

P.M. : Lab Workshop -- Making a Gem.

Thursday A.M.: Psychological Factors and Statistical Analysis.

[redacted] 25X1

P.M.: Lab Workshop -- Sensitometry, Midrodensitometry

Friday A.M.: Photointerpretation

25X1 [redacted]

P.M.: Summary and Question Period.

25X [redacted] will be working with F.F. on this project. [redacted] 25X1 is in J.W.C.'s group and brings to this effort photographic and photointerpretation experience. She should be contacted on project matters in F.F.'s absence.

Additional Analysis of PI responses obtained during our last study is being performed by A.H. The responses are being re-categorized into very specific keys and analyzed for omission, commission and the nature of erroneous responses as a function of ground resolution.

F.S.

[redacted] 25X1